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Forestry and the New York Constitution.

IT is a matter for congratulation that in the midst of the unparalleled excitement of the late Presidential campaign the people of this state did not forget to kill the proposed amendment to its constitution which authorized the leasing of five-acre tracts in the State Forest Preserve, the selling of certain state forest-lands, and the exchange of lands without the Adirondack Park for lands within the Park. It is true that the amendment was so carelessly or ignorantly drawn that no distinction was made between the Adirondack Park and the Forest Preserve, which are quite distinct, but the intention was plain. No doubt, it meant to authorize the Legislature to exchange portions of the State Forest Preserve outside of the Park for private lands within the Park boundary, and although such exchange, if conducted with perfect honesty and intelligence, might in certain cases be advantageous, there has been so much crookedness and jobbery in dealing with the wild lands of the state that it is dangerous to remove any of the constitutional safeguards which have been erected to prevent further spoliation of our forest property.

We did not approve of the action of the Constitutional Convention of 1894 which made it impossible to cut or sell any timber on the state lands. We have never ceased to plead for the preservation of the North Woods, but we have urged that they should be made to yield revenue and grow more productive every year. This constitutional provision, it is true, put a stop to the selling of standing Spruce above a certain size, which was practiced under the form of law and which might easily have ruined large areas of forest; but it seemed to us, and still seems, a short-sighted policy to provide for a thriftless protection of the forest by sacrificing its usefulness. Absolute prohibition of the removal of wood, including even wood that is dead and down, from the state preserve simply means waste; but the convention, impressed with the shameful abuses which have been practiced under the name of forest management, felt justified in withholding from the people of the state the right to use what is their own, because they feared that through ignorance or greed they would not use it to the best purpose. So apprehensive were they of the dangers of mismanagement that they voted unanimously to prohibit any management whatever, and under the constitution as it stands trees must grow to maturity and die, and fall and rot, instead of being encouraged to develop into marketable timber and bring an income to the state. This means either that the convention did not know that there is such a thing as a rational forest management or that they were convinced that the people were so ignorant or vicious that they could not be expected to adopt any such system.

We believe that fundamentally the interest of the people in the forest and the interest of the lumbermen are one, and that no advantage will accrue to either by leaving the products of the forest go to waste. It is our opinion that the cause of forestry was not helped by the dissemination of such ideas by the constitution makers, and that the revised constitution was based on a serious misconception of the true relation of the forest to civilized society. It may be that our legislators are not yet to be trusted in so delicate a matter. But when we read Sir Dietrich Brandis' account of what has been accomplished in Burma in administering forest-lands in which half-wild and wandering tribes hold prescriptive rights, it is not creditable to our enlightenment that such an admission must be made. Nevertheless, the amendment which was killed on Tuesday was not a step toward rational forest practice. It did not provide for any intelligent or scientific administration of the state timber-lands; it only opened the door for greater spoliation. It certainly will not hasten the era of productive forestry to open state forest-lands to invasion by railroads or to lease them out in five-acre patches to campers. What should be provided for is the beginning of systematic forest policy. This would be an object-lesson of inestimable value. It would correct false views and encourage the establishment of skilled forest economy not only in the public, but in the private, timber-lands of the state. This is prevented by the constitution as it is, but matters would be much worse if there were coupled with this prohibition the chance of trading and leasing, and the general demoralization and destruction which might follow.

After all, there is something gained when the people have made up their minds to protect the woods even if they do it unwisely. Let us hope the time will soon come when popular sentiment will be so enlightened that it will be safe to trust the officers of the state to organize and develop a system of rational forest practice, when there will be no fear that our people are too ignorant to do this in a scientific way, and no fear that their moral sense is so dull that they cannot administer a trust like this without official corruption.

A CORRESPONDENT who has recently visited Niagara Falls writes in a disheartened way about the work on both sides of the river. Great care has been taken on the Canadian side to give the reservation a dressy look with smooth lawns and parterres, and beds of plants with bright foliage such as we sometimes see around pretentious villas. The woods have been cut away or thinned out, so as to give an open and park-like effect, and everything that is rugged has been toned down and civilized. The power-house connected with the electric plant has a sluiceway which discharges through a square hole in the wall of rock, and a little stream of waste water squirts out into the abyss in ludicrous competition with the Horseshoe Falls, just above it. On the American side the reservation proper is fairly well cared for, and an attempt is made to save the fringe of native trees and shrubs on the banks of the rapids and Goat Island. But from the last of the Three Sisters, the view up the steep slope, down which the tumbling waters rush, has been hopelessly vulgarized. Instead of the sky-line of forest and rapids there are rods of brick walls and smoke-belching chimneys; and yet the companies want more. Of course, the river still thunders over the preci-

pice, but this is only a part of the spectacle, and its general effect is weakened by the destruction of the original setting of the picture. Perhaps it was not practicable to set these buildings back from the river and mask them somehow with a belt of forest. But it may be taken for granted that the eminent engineers who planned all this never felt that any reverence was due to this sublime spectacle, and the capitalists who employed them naturally cared for profit, without a thought that such a spot as Niagara ought to be the possession of the world. After all, we should, perhaps, be thankful that there is so much of grandeur left to us, and we should congratulate the people of New York and Canada that they had a sufficiently high appreciation of the great cataract to make some effort to preserve it. Nevertheless, it is not creditable to our civilization that we have permitted any defacement whatever of this world's wonder.

Autumn Birds in the Pines.

IN September and during pleasant days in October we see more birds here than at any other time in the year. The migrants come flocking in from the north and stay with us for several days, and during this time many are flitting about that do not remain with us either in the summer or in the winter. Among the most lively species are the various warblers. Sometimes in early morning large flocks of the yellow-rumped warbler appear as if they had suddenly dropped in the night. Mingling with these is the charming little black-throated blue warbler, flitting here and there, catching insects on the wing, frolicking with its companions and performing gymnastic feats almost equal to those of the chickadee. Its throat and the sides of the body are jet-black; the back is blue—not a brilliant but a faded blue; the under side is white. Its sprightliness and pretty markings make it conspicuous among its numerous relatives. The red-poll warbler is also here and stays later than most of the others. It has a dull red crown, with a dusky olive back, while it is a bright yellow below. The handsome Pine warbler is very abundant, pale yellow above, with deep yellow breast and white wing-bars. It is one of our largest warblers, and I think it must breed with us, but I have not been able to find its nest, although I have noticed it in the Pine-woods in summer, and in the autumn it often comes about the house in numbers. The interesting little Maryland yellow-throat nests with us, and this season a pair brought their young near the door. It is a fine songster throughout the season, and in the autumn many others join them here from more northern sections, when they halt and play for several days before their departure to a warmer climate.

This autumn great flocks of seed-eating finches and sparrows came with the warblers. Even the winter bird, Junco, came two weeks earlier than I ever before observed it, in immense numbers, but most of these early arrivals disappeared with the warblers. Many winter here as well as in the more southern states, all the way to Florida. The handsome tree-sparrow is abundant now, flocking in from the northern mountains where it spends its summers. Many of these, too, will go farther south, but a goodly number will remain all winter with the song-sparrows, and the beautiful white-throated sparrow, which is a good songster in pleasant weather, even in winter, but it does not equal the song-sparrow in the volume and variety of its notes. The swamp-sparrow seems to be everywhere in the damp Pines, but it seldom comes about the house. It is darker-colored than most of the other sparrows and is more shy and retiring.

This autumn for the first time I noticed the white-crowned sparrow. The top of its head is pure white, bordered with black. It is an attractive bird, but not as handsome as the white-throat, which comes about our doors in winter, and almost to our feet for food. The fox-sparrow is another handsome species, most numerous in autumn, but a few remain all winter. In color it somewhat resembles the long-tailed thrush, but with deeper and richer hues of dark bay or rufous. It is an active bird, and even larger than the white-throat. Like the brown thrush and chewink, it seems to delight in making the dry leaves fly; several are now near my window scratching among the leaves which have settled around a clump of Lilacs. It has an amusing way of striking with both feet without raising its wings, and then looking about to see what choice morsel has been uncovered. Evidently it likes a meat diet as well as seeds. How little the most of us realize how vast an amount of noxious insects and how many seeds of noxious weeds these birds consume. In winter large flocks may be seen foraging in our fields, gardens and waysides, picking up untold quantities of the eggs and chrysalids of insects as well as seeds.

The winter birds return to the same neighborhood and haunts, year after year, with the same regularity as the summer birds. When the ground is covered with snow I have mingled cracked hickory-nuts with the grain I fed them. When I first offered this unaccustomed food it was left, but now and then, after the grain was gone, a bird would pick at the nuts, and, finding them good, soon learned to take them in preference to anything else. Then another and another learned the trick. The slate-colored winter sparrow, Junco, the white-throat and Fox and song sparrow all took the nuts sooner than the grain. They would snatch a piece of shell and fly a little distance, pick out the meat and return for more; and very expertly some of them managed to get the meat. When one chanced to secure a piece that was difficult to master he would put one foot on the shell and hold it while he probed and brought out the refractory morsel, but not all were equal adepts in this; some even of the same species were not as quick-witted as their companions, and I have often observed the same thing in birds when eating the seed from grass-heads. Some will take a stalk, bend it down and hold it firmly while they pick out the seed; others will have a hard time to capture seed from the swaying stalk.

The following winter, after the birds have learned to eat the nuts, they do not need to be retaught, but remember their lesson, and at once take the shells. The young that come with the old ones at first stand aloof and eat the grain, but it is not long before they, too, are preferring the nuts. The young are not as decided in color as the old birds, and other characteristics go to show the old from the young.

Our little field sparrow is more abundant in autumn; at least, we see more of them than in summer, and in winter it is as familiar as the little chippy is in summer. It is about the same size as the chippy, but has more of a reddish cast. It belongs in the genus Spizella along with chippy; in fact, all the members of this genus are small, except the tree sparrow, S. monticola, which is nearly as large as the song sparrow. All of our sparrows are neat and dainty in habit, wholly unlike the scavenger of our streets, the English sparrow, which in many places, especially on our churches, make sad havoc with the Ivy. Perhaps it has a hereditary recognition of the Ivy as one of its home plants.

The little goldfinch has put on its winter dress and is doing what it can toward exterminating many pestilent weeds in all neglected places. Just now a party of them are investigating the Cosmos seed in the border. Either it is not in the right stage to suit them, or, for some reason, they have concluded it is not wholesome, and have gone to the heads of Zinnia, which suit them much better. Some of them are swaying among the plumes of the tall Pampas grass—graceful, merry bodies, remaining with us the entire year. Their neat lichen-covered nests are now conspicuous among the branches of partly denuded trees. A near relative of theirs, the Pine linnet, is returning from the north, where it goes to rear its family. These, too, are jolly birds, and will stay with us all winter, making the dry seed fly from the Pine cones, and then whirling and performing gymnastics in the air so as to catch it before it falls to the ground.

Among the larger birds now abundant are the robin and the bluebird, both of which remain all winter. The cries of the blue jay and crow are familiar sounds, and the clatter of the handsome goldenwing is heard all around, with the tapping of many other woodpeckers. During these mild October days, especially in the evening, we hear the harsh cry of the tattlers in the damp pines, and the soft whistle of the plovers returning from the far north. Many of them halt along our coast until severe weather sends them farther south. The killdeer plover, unlike the others, remains with us all summer, and we still hear its cry, together with other unfamiliar notes and sounds that set us to wondering what their source may be, and remind us how much we have yet to learn.

Vineland, N. J. *Mary Treat.*

Conifers on the Grounds of the Kansas Agricultural College.—I.

SCOTCH AND AUSTRIAN PINES.

THE plantings of conifers on the grounds of the Kansas Agricultural College have been made from 1872 up to the present date, and have embraced most of the more important genera and species, but of all those planted the ones set in the greatest numbers and the ones which, on the whole, have proved most satisfactory are the Scotch and Austrian Pines. Of these two sorts it is difficult to say which is the superior for this climate, but either should prove quite satisfactory. The oldest specimens of these on the College premises are in two belts on what is known as the Old College Farm. They were set in 1872 and 1873, and were then two and three years of age. One belt consists of mixed Scotch and Austrian Pines, the other entirely of Austrian. The land is the average high upland prairie, with a gentle slope to the north and east, and the soil is a clay-loam about twelve inches in depth, with a rather stiff clay subsoil. In the mixed belt the Scotch Pines do not seem to have withstood the hardships to which they have been subjected nearly as well as the Austrian, for while there are three or four of the smaller Austrian Pines which are dead, there are a dozen or more of the Scotch, some of them large trees, which evidently do not owe their death to crowding, as seems quite likely to be the case with the Austrians. In this belt sixty-five Austrian Pines average 27½ feet in height, 8 inches in diameter at the ground, 6½ inches at 2 feet, and 5½ inches at 6 feet. The ten trees having the largest diameters give the following averages: Height, 33 feet; diameter at the ground, 10¾ inches; at 2 feet, 8.9 inches, and at 6 feet, 7.85 inches. From measurements taken in this same belt by Professor Mason in 1888 I obtain the following figures for the ten largest: Diameter at the ground, 9 inches, and at 6 feet, 6½ inches. Only nine Scotch Pines are now living, and these average as follows: Height, 32½ feet; diameter at the ground, 9 inches; at 2 feet, 7½ inches, and at 6 feet, 6⅛ inches. The largest ten in 1888 averaged 7 inches in diameter at the ground, and 5 inches at 6 feet.

The belt of Austrian Pines contains 128 trees, which give the following average measurements: Height, 27 feet; diameter at the ground, 10 inches; at 2 feet, 8 inches, and at 6 feet, 6½ inches. The ten trees having the largest diameter average as follows: Height, 29.8 feet; diameter at the ground, 13¼ inches; at 2 feet, 11¼ inches, and at 6 feet, 9½ inches. In 1888 they averaged 10 inches at the ground, and 7 inches at 6 feet. The tallest single specimen in this belt is 36½ feet in height, with a diameter of 13¾ inches at the ground, 11½ inches at 2 feet, and 9¾ inches at 6 feet.

It is an interesting point that in twenty-four years forest conditions have been so far established in these belts that young seedlings of many forest trees are found there, Quercus acuminata being especially abundant, though the nearest acorn-bearing trees are over half a mile away. And what is still more interesting, Pine seedlings are quite abundant under many of the trees in both belts. Whether this has ever occurred before, and the little seedlings have succumbed later on, is not known, but the fact that Professor Mason has repeatedly tried to find seeds with sound embryos, and never succeeded, and that this year quite a number have been germinated in flats in the propagating-house might indicate that for some reason the seed matured by the Pine-trees last year has more vitality than in former years.

On the lower college farm is another plantation of Scotch and Austrian Pines, set in the spring of 1891 at two years of age. They are on the flat at the foot of a hill, and the soil is a fine deep clay loam. They have been given clean cultivation since setting, and though several seasons have been very dry, they have probably had, on the whole, exceptionally favorable conditions. There are 319 Scotch Pines, and they give the following average measurements: Height, 7½ feet; diameter at 1 foot, 2¼ inches. The highest tree is 11 feet and the largest diameter, 3⅜ inches. The Austrian Pines join the Scotch on the west, and the soil and other conditions are practically identical. There are 334 trees, which average as follows: Height, 5.37 feet; diameter at 1 foot, 1.89 inches. The highest tree is 7¾ feet, as against eleven feet in the case of the Scotch Pines, and the largest diameter, 3¼ inches, as against 3⅜ inches. This, it will be seen, gives the Scotch Pine in this plantation a much better showing than the Austrian. It will also be seen that this gives an average increase in height of a trifle over one foot a year for the Scotch Pines, and about three-fourths of a foot for the Austrian. It is interesting to note in comparison with these figures that twenty-five Scotch Pines, selected at random from among the 319, averaged at the beginning of the season of 1896, 7.3 feet in height, an average increase of 1.04 feet for each year of the tree's age. On August 14th they showed an average increase in height of 26 inches for the season, the greatest growth being 37 inches. Twenty-five Austrian Pines selected in the same way averaged at the beginning of the season 5.42 feet in height, a yearly increase of .774 foot. On August 14th they gave an average increase in height for the season of 21 inches, and the greatest growth was 29 inches, as against 37 inches for the best Scotch Pine

As shelter, either for orchards or for stock, these two species seem admirably adapted to this country, while as timber trees they would seem to be the equals, if not the superiors, of most deciduous trees.

Agricultural College, Manhattan, Kansas. *F. C. Sears.*

[The Scotch and Austrian Pines grow rapidly in the northern and middle western states, and are extremely promising for twenty or thirty years. As a rule, however, they suffer from various diseases, and are short-lived here, so that it is wise to use them cautiously. No other evergreen trees, it is true, have produced wind-breaks more rapidly on the western prairies, while no other trees which have been planted on a large scale in the United States have, in the long run, proved so disappointing. Our native White Pine is more difficult to raise from seed, and, therefore, more expensive, and for the first ten or twelve years it grows less rapidly than these European species, but it lasts much longer on the prairies, where we have seen these trees tried together, and it is no doubt much more satisfactory in all the northern states for general planting. —ED.]

Plant Notes.

Have we Two Native Species of Trumpet-flower?

THE blooming, simultaneously, of two native Trumpet Vines on my place has explained to me what has hitherto been a puzzle to me, namely, the statement in several horticultural journals, GARDEN AND FOREST among the number,* that the flowers of the Chinese species, Tecoma

* See vol. iii., p. 392, Fig. 50.

grandiflora, are more showy than those of our native species—a statement which surprised me, since the foreign species certainly is less brilliant in color than the native flower with which I am most familiar, and to which I wish to call attention. The fact is, we have two very distinct native varieties, if not species. The smaller and duller-colored form is, perhaps, the more common one in cultivation, or possibly the only one cultivated at the north; and if comparison is made between this and the Chinese species it will undoubtedly be to the advantage of the latter. Both the native varieties have flowered on my place this year, and the differences between the two are so numerous and conspicuous that I cannot help thinking that one of them must be unknown to horticulturists.

My specimen of the variety with smaller and duller-colored flowers was obtained from Thomas Meehan & Sons, Germantown, Pennsylvania; those (I have several) of the large-flowered variety I dug up myself in the bottoms of the Northwest Branch, Prince George County, Maryland, just outside the north-east boundary of the District of Columbia. The latter bloomed some two weeks earlier than the former, but is still in flower, the other being also now in bloom; and as I have had the opportunity of comparing them carefully, I am convinced they are at least varietally distinct, the principal points of difference being as follows:

Small-flowered variety (true T. radicans?): Flowers, 2–2½ inches long, 1¼–1½ inches broad; *tubular portion straight, not longer than stamens.* Color: Front, dull flame-scarlet;* tube cadmium-orange on top, slightly paler orange on under side; back of reflexed portion, salmon-color, not distinctly different from color of tube; calyx, tawny olive above, gallstone yellow, tinged with olive beneath. Foliage: Leaflets, 7–13; dark green, *distinctly glossy* above, grayish green (between pea-green and malachite) beneath, with fewer, coarser teeth.

Large-flowered variety: Flowers, 3–3½ inches long, 2½ inches broad; *tubular portion strongly curved, much longer than stamens.* Color: Front, deep and pure red (between poppy-red and carmine); tube, poppy-red on top, orange-vermilion on under side; back of reflexed lips, deep salmon-color, distinctly paler and duller than color of tube, even of under side; calyx, rich reddish brown (approaching claret-brown). Foliage: Leaflets, 7–13, yellowish green (dull parrot green) and *not at all glossy* above, pale yellowish green (bice green) beneath; teeth smaller and much more numerous.

Both forms are found in the District of Columbia, but which is the more common one I am not at present prepared to state. The two localities where, in my experience, the Trumpet-flower is most abundant, are in lower Maryland, near Point Lookout, and in the bottoms of the Embarras River, in Jasper County, Illinois. At the former place it was rampant everywhere along the roadsides, clambering over fences, shrubbery and low trees, while in the latter it bedecked practically every tree throughout the woods. Although in full bloom during my visit to both places, I paid no particular attention to the flowers, the question of two forms not having then occurred to me. But my impression is that the Point Lookout flowers were all of the small orange-colored type, and those of the Embarras bottom of the large red type; but this is no more than a vague impression, which may be erroneous.

Brookland, D. C. *Robert Ridgway.*

New or Little-known Plants.

Vitis Doaniana.

VITIS DOANIANA, a wild Grape, native of the Texas Panhandle country, described and named by T. V. Munson, of Denison, Texas, has shown itself in the experimental vineyard here to be hardy beyond almost any other Vine. It is a rampant grower, encroaching on its neighbors every year, and often in a single season making a growth of from fifteen to twenty feet. The vines do not branch as much as they do in most other species, and the young canes as they ripen in the fall become a rich dark brown. The upper surface of the leaves and the young canes are covered with a white, cottony pubescence, which adheres more or less to the leaves until they fall in the autumn, and to the canes until they are a year old. In the younger parts this is sufficiently abundant to give them quite a whitish appearance. The lower surface of the leaves is still more abundantly covered with a more villous pubescence, which, being less exposed to the action of the weather, remains intact till autumn. The leaves themselves are of a light bluish green, and the whole effect (see fig. 59, p. 455) is peculiar and quite characteristic.

The bunch is rather loose, irregular in shape and often shouldered. The berries on different vines vary greatly in size, ranging from fully as large as Catawba down to the size of a pea. They are jet-black and covered with a thick bloom, and, for a wild grape, the flavor is by no means bad. The seeds, in size and general outline, resemble somewhat those of Vitis labrusca, but the beak is not so long and the chalaza much more distinct in outline. Another peculiarity is a narrow, well-defined depression extending from the chalaza to the beak, which, so far as I have been able to observe, is found in no other species except V. Solonis.

Its vigor of growth, general hardiness under adverse climatic conditions, and its comparative immunity from all fungous diseases should make it most valuable either for stocks or for hybridizing with a view to continuing these characteristics with the fruit characters of some of the improved varieties. The fact that it is a vigorous grower, bearing abundant foliage and retaining its leaves unimpaired in color till frost comes in the fall, should commend it for use on arbors or for covering unsightly places.

Agricultural College, Manhattan, Kansas. *F. C. Sears.*

* Names of colors used here are those of the writer's *Nomenclature of Colors* (Little, Brown & Co., Boston).

Cultural Department.

Notes on Gooseberries.

THE native species of Currants and Gooseberries have as yet but very few representatives among varieties which are cultivated for their fruits. That this should be true of Currants is not surprising, for the various red, white and black fruited kinds of European origin have generally succeeded so well in the older-settled portions of the northern states that no great need has been felt in those sections for attempts to introduce improved native varieties. In the south-west, where the European varieties do not thrive, some attempts have been made to supply their places with selected varieties of the native species, Ribes aureum. This species is commonly known as the Missouri, or Buffalo Currant. It bears spicy-scented long yellow flowers and yellow or metallic blue-black fruit, and is sometimes grown as an ornamental shrub. Crandall, Jelly, Utah, Golden and other varieties of this species have been introduced within the last fifteen years. While the best of these are desirable in portions of Kansas, Oklahoma, Texas and other sections of the south-west, where a good substitute for the European varieties is greatly needed, yet none has as yet been extensively planted where the European kinds can be successfully grown.

But with Gooseberries the case is different. European kinds have usually proved unsuccessful in America on account of the ravages of the mildew, Sphærotheca Mors-uvæ, so that there has been more of a demand for the introduction of selected varieties of native origin than there has been for the introduction of native Currants. Although this demand has long existed, the progress in this direction has been much less rapid than it has been with either the native Grapes or the native Plums.

The number of cultivated Gooseberries which have descended purely from native species is really very small; in fact, it is doubtful whether any of the well-known kinds are of purely American origin, except Pale Red, also known as Cluster, American, etc., which was introduced into cultivation many years ago. It appears to belong purely to Ribes oxyacanthoides, which species takes its name from the resemblance of its leaves to those of the English Hawthorn, a resemblance that is more noticeable, however, in the leaves of the Downing than in those of the Pale Red.

Ribes oxycanthoides, to which most of the native culti-

vated varieties belong, either partially or entirely, is more common in New England than in New York. Its range extends northward through Canada and westward to California. Its fruit is red or purplish, with smooth thin skin. It has shorter stamens and broader calyx lobes than R. rotundifolium has, and it is also characterized by very short peduncles. It is sometimes armed with short prickles between the nodes, or the lower parts of the canes may be thickly beset with prickles. The prickles which occur beneath the axils of the leaves are short and slender as compared with those which characterize European Gooseberries. The slender branches arch or droop gracefully in marked contrast to the thick, straight branches of the European R. Grossularia.

Houghton resembles Pale Red very closely in foliage and fruit, but its habit of growth is less upright. Possibly it belongs purely to the oxyacanthoides species, but a study of seedlings of known parentage which I have grown suggests that it is a hybrid between Ribes oxyacanthoides and R. Grossularia. Pure seedlings of it grown here have not yet fruited, but they show no marked Grossularia character so far as foli-

Fig. 59.—Vitis Doaniana.—See page 454.

age and habit of growth is concerned. Nevertheless, two of its well-known seedlings, Downing and Smith, are clearly hybrids between R. oxyacanthoides and R. Grossularia, and I have some crosses of Pale Red by Houghton which show Grossularia ancestry, but the pure Pale Red seedlings do not.

Downing, which is generally called the standard of excellence among the native sorts, is a seedling of Houghton. Its foliage and the size, texture, flavor and thin skin of its fruit indicate its relationship to R. oxyacanthoides, but the color of the fruit, thick spines and thick, scarcely curving, canes indicate Grossularia parentage. The opinion that it is a hybrid of R. oxyacanthoides and R. Grossularia is confirmed by a study of its pure seedlings, most of which resemble Downing in habit, and some of them show marked Grossularia character.

Pearl, another hybrid of Ribes oxyacanthoides and R. Grossularia, is from seed of Downing fertilized by Ashton, an English sort. So closely does it resemble Downing that it is difficult to tell the difference between the two, either in bush or in fruit. In some sections it is said to be more vigorous and productive than Downing, but it has proved less productive so far as tested here.

Smith, or Smith's Improved, a seedling of Houghton, has fruit equal to Downing in size, or even larger. The green color of the fruit and shining upper surface of the leaves, together with other features, indicate that it has originated partly from Ribes Grossularia. Some of its crosses with Pale Red also show characters of the same species.

Mountain is of especial interest since it is the only cultivated variety I know which represents Ribes Cynosbati, the most common wild species of this and many other sections of New York state. Its tall canes, sprawling branches, the dull brownish purple color of the fruit and the very dark green pulp are all Cynosbati characteristics, as are also the beautiful brown and red colors of its autumn foliage, quite unlike the yellow or occasional dull brown tints of the European kinds.

The fruit, which is very large for a native Gooseberry, has smooth and thick skin, which indicates Grossularia parentage, for Cynosbati fruit is smaller and the thin skin is usually beset with prickles. The glossy upper surface and somewhat leathery texture of the foliage also indicate its Grossularia parentage, since Ribes Cynosbati has soft pubescent leaves that are not at all leathery, neither glossy. Although this variety is of some interest botanically, it is not productive enough to merit cultivation for its fruit.

Viewed from the standpoint of the practical fruit grower, the Gooseberries which have been cultivated in this country fall readily into two classes, namely, those which are liable to injury from attacks of the mildew, and those which are not. Although it attacks other species of Ribes, yet in this country the mildew finds all varieties of the European Gooseberry particularly susceptible to its attacks, including, of course, the American-grown seedlings of this species, even though they are catalogued as American Gooseberries. For this reason the varieties which have found their way into general cultivation in this country, either like Pale Red, belong purely to a native species, or like Downing, Mountain and Pearl, are hybrids between an American species and the European R. Grossularia. Thus it happens that the classification into successful and unsuccessful varieties which practical American fruit growers have felt compelled to accept, follows closely, though, perhaps, unconsciously, the lines defined by botanists long ago for the classification of the species.

It is now known that by a wise regard for sanitary conditions, and by systematic and thorough use of fungicides, some European Gooseberries may be successfully grown in various parts of this country, so that it is reasonable to expect that the fine colored, large and really excellent fruit of the best English Gooseberries will become more common in American markets than they have been in the past.

Geneva, N. Y. *S. A. Beach.*

The Cultivation of Mushrooms.

IT has always been considered that there was more or less of legerdemain in the successful growing of Mushrooms, and many old-time cultivators made this supposition seem probable by various pretenses which had little foundation in fact. Many people object to eating Mushrooms for fear of spurious varieties which are known to be poisonous, and great care must be exercised when gathering them in the fields, but under cultivation there is no danger whatever. I have never known any other species of fungus to be produced in the Mushroom beds that approached Agaricus campestris near enough in appearance to be mistaken for it, and cultivated specimens may be safely eaten with no fears as to the results. Very recently a popular interest in mycology has sprung up, and there are now two flourishing societies in this state which have meetings and exhibitions for the better study of fungi and their edible species. These meetings and increasing observations by the mass of the people will help to do away with a great deal of the ignorance and superstition about this family of fungi, and anything that will help to make better known and appreciated these esculents will be a public benefaction.

Ever since we have begun to grow the Mushroom under the greenhouse benches we have never had to record a total failure, and some of the crops have been most successful. We are exceptionally situated for obtaining material for the beds, and this is a primary requisite, it being essential to collect this quickly so as to have enough in bulk and to get the whole in a warm but moderately dry condition before any part of it has lost virtue by becoming cold. It is best to collect all that is possible each morning, throwing out all long straws, and, when sufficient is obtained, letting the heap heat moderately, say for two days, before turning it over, and keeping up this while forming another heap of the newer material to be treated separately, making up a bed as fast as each heap is in proper condition—that is, when rank gases have been eliminated and excess of moisture evaporated by warmth and exposure. It may be safely considered fit to make up in beds when a handful can be taken up without soiling the hands or moisture felt to be present. One of our mistakes, that was not apparent for some time, was making the beds too deep, and this resulted in overheating when the beds were made up. But as the Mushrooms were produced only about the outer edges of the beds or where the new bed was joined on, this led to the discovery of the fault. Now we never make a bed more than ten inches deep at the back, and sloping gently to six inches at the front of a four-foot bed. Under these conditions the temperature never seems to get beyond control, and rarely exceeds 100 degrees, Fahrenheit.

The firmer the beds are made up the less violent the heat at first, and the longer it will last, and it will produce quicker returns. A short-handled mallet is useful in compacting the beds. We wait until the maximum temperature has been reached, and spawn when the temperature is falling at about 95 degrees, and add a coating of fresh loam a day or two after, with water as often as necessary to keep the surface moist, always using tepid water to prevent chilling the beds. If it is found that the heat rises to an undesirable degree, a watering will often cool it down sufficiently, but should the heat get beyond 100 degrees, either before or after spawning, it is better to take the whole out and make it over rather than risk a failure.

A good quality of the spawn is essential to success, but not half the failures attributed to spawn of inferior quality rightly belong there. For the last two years we have been very successful in getting some that was really good, with no traces of mycelium that had started into premature growth. Always avoid spawn that has a growth of white threads on the bricks, as this is an evidence of premature germination of the mycelium. This is what ought to take place when it is planted in the beds, but it is too often induced by improper conditions before it reaches the planter. When one bed is made up and another is about to be commenced, we take enough bricks of spawn and lay them out on the top of the bed and turn every second day or so. This renders the bricks less dry, so that they are more easily broken, and rapid growth begins as soon as planted, and a week or two is saved in bringing up the crop.

Nitrate of soda is an excellent stimulant for Mushroom beds when they seem to be past bearing. A partial drying off, and then a good soaking with a weak dilution of nitrate, will start up a good second growth that will sometimes equal the first.

Our beds are formed under the greenhouse benches in a structure where Chrysanthemums and Carnations are grown, and the temperature of the house is kept at 50 during the winter. This suits the crop well, and when in bearing a cloth is tacked about the bed to keep it dark and give more even conditions as to moisture and heat; that is, the heat generated by the beds themselves will be held, and if the temperature chances to fall below 70 before the crop is well up, a good covering of hay will bring the heat up to the surface and raise it several degrees. Sudden fluctuations in temperature are in this way easily avoided.

There is no better time than the present to start a bed. Flies are very troublesome in the structure from early formed plantings, but from this time on there will be no trouble from them, and if an airy shed or barn floor is available for the preparation of the manure no great difficulty need be anticipated in the production of plenty of Mushrooms during winter, when they are always a welcome addition to the short list of available table vegetables.

South Lancaster, Mass. *E. O. Orpet.*

Hardy Ornamental Grasses.

AS outdoor decorative plants these Grasses are gaining favor every year. When once planted out the only care they need is cutting down the withered stems annually, giving a little mulching and reducing the size of the clumps when they become too large. If planted either in large beds wholly by themselves or associated with such plants as Cannas, Ricinus, Aralia papyrifera, or the taller-growing perennial Sunflowers, they make a most telling display. The tallest of the species in common use, not including the Bamboos, is the Arundo donax, which under favorable circumstances makes an annual growth of about fifteen feet and dies down each autumn to the crowns. It completes its growth by the end of July, and afterward sends up large panicles of flowers. The variety named Versicolor has the leaves ribboned with white; it only grows about six feet in height, and this is one of the most desirable of all the Grasses. It is easily propagated by placing the full-grown stems lengthwise in wet moss or water, in a moderately warm house. In a short time the small shoots in the axils of the leaves will take root, when they should be separated from the parent stem and put into small pots. Pieces of the thick roots cut up into lengths of about two inches and put in ordinary soil in a cool house will grow well. Erianthus Ravennæ is next in importance; it grows to a height of about ten feet, the leaves are very long and narrow, the panicles stand well above the foliage. This Grass is well suited for planting singly in wide borders. There are two forms under the same name, but they only differ in height and time of flowering. The flower-heads are very little inferior to those of the well-known Pampas Grass, and if they are cut before full development takes place and dried in the sun they are quite as handsome. It is best increased by dividing the roots. It will ripen seed, but in the seeding stage the plants have to be closely watched, as the English sparrows are very fond of it. The Japanese Eulalias (miscanthus) form a valuable group. E. Japonica is a dense grower, about five feet in height; the leaves are narrow, with a faint whitish band down the centre. The variety Variegata is longitudinally marked with white; Zebrina is marked transversely with yellow blotches. Another species known as Univittata is not quite so tall as the three first mentioned; it forms a very beautiful plant in an isolated position; it has narrow green leaves, with a light strip down the centre of each. The Eulalias are best increased by division; this should be done in the spring-time just when the plants are starting into growth; old plants may be dug up and with a hatchet cut into pieces small enough to go into three-inch pots. Keep in a shaded frame till they are rooted.

Among the many low-growing Grasses the most useful is Pennisetum longistylum, which, when planted in suitable soil, is never out of bloom during the entire summer. Plants of this sometimes get winter-killed with us when left out-of-doors, and we therefore usually dig up the clumps and put them under sash for the winter. Plants raised from seed early in the season do well enough, however. A nice bluish-gray Grass for edging is Festuca glauca. It grows in dense tufts about eight or ten inches high. Another Grass of the same color is Elymus glauca, with a rather straggling habit, but when grown in masses this fault is not obvious. This Grass is of a most desirable color, and it grows to be about eighteen inches high. For dwarf variegated Grasses the variety of Dactylis glomerata is the best with us, although the variegated Bambusa Fortunei is a more permanent plant. We have tried several of the Bamboos for the last few years; those which have proved hardy here are B. sulphurea, B. mitis, B. Simonii, B. chrysanthæ, B. Ragamowski, Arundinaria metake and A. gigantea.

Botanic Garden, Washington, D. C. *G. W. Oliver.*

Notes on Chrysanthemums.

FOR a number of years I have noted the development of Chrysanthemum-blooms from the time the buds show color until they are fully open, and also the effects of artificial heat and moisture, especially on the colors of the flowers. It used to be difficult to hold our specimen plants of Louis Boehmer until exhibition time, usually the first week of November. When the variety was first introduced the blooms showed color on the 25th of September. Every year since it has been a few days later, and this season it did not show color until the 11th of October. If the exhibition had been held this year during election week it would not have been in bloom. The first year I grew Portia it was difficult to hold. The next season it was a week too late, while this year it is again a few days too early. W. H. Lincoln has been growing later. It is unusual now to have bloom fully open for our exhibitions when held during the first week of November, though a few years ago I remember exhibiting flowers of this variety at the Madison Square Garden, New York City, on the first of November. Although the exhibition this year at Boston is a week later than usual, our specimens of W. H. Lincoln will not be quite finished until the end of the week. Compared with several other late varieties, it is the slowest. S. T. Murdock and Kitty Sanders were later in showing color than W. H. Lincoln, while Gretchen Büettner, Louis Boehmer and Georgiana Pitcher were at about the same stage. All are now advanced further than W. H. Lincoln, which is the last on the list. The loosely built incurved flowers always open more quickly than the denser reflexed types, and pink and white colored flowers open faster than yellows and reds.

Artificial heat in the development of blooms acts curiously. It does not have the same effect on Chrysanthemums that it would have on other plants. Naturally, one would expect that heat would accelerate, and cold retard, the progress of opening. Such plants as I have in cold frames are as far advanced as they would have been if kept in a temperature ten degrees higher. To keep the plants in good trim it is essential to exclude frost, and that would appear to an ordinary observer all that is necessary. The effect of artificial heat on color appears to have a more important bearing. When the night temperature falls below fifty-five degrees all dark colors fade. I consider the settling of moisture on the blooms, as it must do when there is no fire-heat, detrimental to high color. It is essential to keep up a dry moving air. When it was necessary to hold back some early varieties I allowed the temperature to fall as low as I safely could, with the result that the brilliant hues of G. W. Childs and Cullingfordii vanished, leaving them a tawny red. Of recent years the high and perfect coloring of my specimens of G. W. Childs and Cullingfordii has been noteworthy. This is especially true this season. Two weeks ago one would say G. W. Childs was ready for the exhibition, but to-day the glossy crimson tones are as true as at that time, while the flowers have built up to almost double the size. The effect of heat on the pink varieties appears to be the same as upon the reds. I think there is a liability among the yellow varieties to lose their brightness; at least, there does not appear to be the same necessity of heat to maintain their natural colors. White-flowered kinds seem to be benefited by a warm stirring air. The glistening white of Ivory never shows so grandly under lower temperatures. Such doubtful varieties as G. Daniels, Theo and Silver Cloud bleach out to a pure white.

Wellesley, Mass. *T. D. Hatfield.*

Begonia manicata.—This free-growing variety is useful either as a decorative plant or for winter flowering. In summer it may be used for grouping, either with the Rex varieties or as a substitute for them. The foliage is of a pleasing bright green; the plants are vigorous and healthy with an ordinary amount of care. A partially shaded situation is preferable, as the foliage then becomes a darker green, but the plants will stand the sun's rays without hurt if necessary. On being removed indoors, before danger of frost, water should be given rather sparingly, and this will help to somewhat ripen the stems and induce the plants to flower more freely. The branching cymes of pink flowers are useful for cutting, and make a graceful appearance in a vase. Stems from twelve to fourteen inches in length are readily obtained from healthy plants. Ordinary greenhouse treatment, with a night temperature of about fifty degrees, is the most suitable; if the plants are kept much warmer than this the flowers will not open so freely nor last so long. Too frequent potting and large shifts are not advisable, as the plants grow more compact in shape when the roots are somewhat confined. We have some good healthy specimens now in ten-inch pots which measure two feet through, but smaller plants are as a rule more serviceable. Propagation is easily accomplished by cuttings or by division, rooted portions of the stem being readily obtained.

Anthericum vittatum.—The superiority of this newer form over the old variety, A. variegatum, is so marked that it will undoubtedly supersede the latter in the near future. It is, as the name denotes, striped longitudinally as the old form is, but differs in being much brighter in the markings. A broad band of creamy white traverses the centre of the entire leaf, which is margined with an irregular band of bright green streaks of the green, sometimes running in through the white. In short, it may be said to be white where the old form is green and green where the old form is white. It possesses all the good standing qualities of the older form; the habit is more compact and growth somewhat slower. It is very serviceable

as a dwarf decorative plant, and especially valuable as an edging for groups; the drooping habit of the under leaves enabling it to entirely hide the pots in which the plants are grown. Division is probably the easiest and best method of propagation. The plants thrive well in light, moderately rich soil and with ordinary greenhouse treatment. It is of a rapid rooting nature and quickly becomes pot-bound, and should be kept liberally supplied with water.

Tarrytown, N. Y. *William Scott.*

Cannas.—As soon as the first frost disfigures the foliage of Cannas we lift the roots and lay them to ripen in large clumps, without covering, in pits secure from frost. When Chrysanthemums are gone we divide and repot the Canna roots. In a good, light greenhouse, with a minimum of fifty-eight degrees, they soon start and give from the end of January onward a grand show of bloom. No plants are more effective for winter decorations. The flowers are larger and not so liable to blemish. Very little water is given until some growth is made, but when well rooted the plants will take an abundance of water, and also be benefited by liquid-manure at least once a week. Our plants increase in size and make fine specimens by the time they are required for the summer display. If rested for a fortnight or so in May they soon start into growth when planted out, and bloom with scarcely any intermission the whole year. Madame Crozy, Florence Vaughan, Charles Henderson, Paul Bruant, Helen Gould and J. D. Cabos make a fine selection.

Wintering Bananas.—We have specimens of Musa ensete now ten years old. Every season they have been planted in a conspicuous place near the mansion, and have grown into bold plants from ten to fifteen feet high. If planted out it is impossible to get any roots when they are taken up for the winter. We store them as if they were bulbs. A friend had a plant given him bundled up with moss in bagging, and it remained in this condition in a warm loft all winter quite forgotten. The following May the plant was discovered growing toward the light and was again planted out for the summer. It made good growth and this treatment has been continued. We place our plants in dry soil, and about the end of February put them in half flour barrels and start them enough to make a fair showing at planting time.

Wellesley, Mass. *T. D. Hatfield.*

Correspondence.

Notes from West Virginia.

To the Editor of Garden and Forest:

Sir,—In planting trees and shrubs for autumnal effects it is well to pay some attention to the fact that all do not attain the greatest beauty and brilliancy of foliage at the same time. The landscape takes on a very different aspect in each of the three fall months. The brilliant Sour Gums, for instance, change from burnished green to rich deep red early in the fall, and are usually denuded of foliage early in October. Walnuts drop their leaves in September, hereabout, while Hickories retain theirs a month later. In late October all the Ashes, Gums, Walnuts and Sugar Maples in this vicinity are stripped bare of foliage. Thus, if one were to plant no other trees than these around his house, his grounds would take on their winter aspect very early in the autumn after a few days of passing splendor. On the contrary, home grounds in which Birches, Beeches and Oaks abound, would be much later in succumbing to the frosts of fall.

A neighbor of mine, living in a well-watered hollow, has many Willows of different varieties planted about his house. Here summer abides long after it has fled from the surrounding hills. Often the grass is green until covered by the snow, and the Willows, losing their foliage very late in the season, seem to shorten winter by burgeoning into their fresh young leafage long before the forest trees have awakened to a sense of spring.

There can be little doubt, however, that the most pleasing landscape effects are attained by grouping together a large variety of such trees and shrubs as naturally harmonize in color. We cannot do better than to go to the woods and copses to learn how Nature produces with her careless prodigality a rich and satisfying beauty at this season of the year. In many woods the most brilliant coloring is in the undergrowth, the Sumachs, Briers, Dogwood and Sassafras bushes forming a low belt of bright reds and orange and yellow hues, which, if carried higher, would dazzle, rather than charm, the eye. The larger trees of our woods, for the most part, take on soberer colors, which are accented here and there by the scarlet of a vigorous Virginia Creeper swinging high in air. Thus the color-scheme tones with the lucid blue of the sunny October sky.

Now that the month nears its end the Sassafras and Sumachs are no longer brilliantly conspicuous, and the glowing red of the Virginia Creeper has faded from the landscape. The woods have lost much of their brightness, but the Dogwoods still hold their colors. Striking is the contrast between two large-flowering Dogwoods planted together at Rose Brake. Of these the Red-flowering Dogwood is now a brilliant claret-color, while the White-flowered form has assumed a much duller tint. A fine young Double-flowered Almond of the white variety now has foliage of a beautiful clear light salmon, while its neighbor, the common pink variety of the same plant, contrasts with it finely in a garb of green and lemon-yellow. To-day the most brilliantly tinted shrub, or small tree, in the home grounds is a Japanese Maple, which was green all summer and is now an intense blood-red, making a vivid spot of color on the grass. The red-leaved Japanese Maple, known to nurserymen as Sanguineum, on the contrary, has lost the rich uniform red which makes it conspicuous in June, and has assumed a harlequin costume of dull green, mottled with orange, crimson and maroon. Acer Tartaricum, var. Ginnala, conspicuous for its Joseph's coat of many colors a week ago, has now lost all its finery and assumed its winter aspect.

A very handsome young Chinese Quince has rich red leathery foliage, retained sometimes until the last of November, and is effective now, standing out against a background of less brightly colored Peaches and Apricots. Much has been said about the fall beauty of Spiræa prunifolia, but a large bush of another Spiræa, sent to me under the name of S. cratægifolia, is even more brilliant in autumn dress. This plant is five feet in height and ten in circumference. Nothing can be more ornamental than its spreading growth and handsome foliage bright with harmonious blending of red and orange hues. Almost as brilliant in effect is Thunberg's Barberry, which will be a conspicuous ornament of the shrubberies all winter, when the bright leaves have fallen and the still brighter berries remain until flowering time comes round again.

Rose Brake, W. Va. *Danske Dandridge.*

The Preservation of Fruits by Vapor of Alcohol.

To the Editor of Garden and Forest:

Sir,—This subject was brought to prominent notice by the experiments of Monsieur Petit, made at the National School of Horticulture at Versailles, France, in the fall and winter of 1894. A translation of Monsieur Petit's report was forwarded to this country by Mr. Henry P. Du Bellet, consul at Rheims, and was published in the *Consular Reports*, XLIX., No. 180, p. 24, September, 1895. An advance copy of this paper, extracted from the consular publications, was widely circulated among horticulturists in the United States by the Division of Pomology, United States Department of Agriculture. The method tested and favorably reported consists simply in the installation of the fruit in a moderately tight chamber or closet in which a small quantity of alcohol is exposed for evaporation. Monsieur Petit's successful experiments were upon grapes.

The report naturally aroused considerable interest in this country at the time, though little seems to have been done in actual demonstration. Professor Goff, of the Wisconsin Experiment Station, was the first, and, so far as I know, has been the only one to report any American experiments with this interesting method (*Wisconsin Experiment Station Reports*, 1895, p. 304). After making tests with several varieties of plums, Professor Goff concluded that "alcoholic vapor is an effectual preservative against the common mold or molds in a damp atmosphere; but the vapor did not prevent, except for a limited time, if at all, other changes within the fruits which destroyed their value."

During the summer and fall of 1896 we have made a large number of experiments with this method at the Vermont Experiment Station, in which we have used strawberries, raspberries, currants, peaches, apricots, cherries, plums and grapes. We have also used several forms of apparatus, so that we have been able to sound pretty thoroughly the practicabilities of fruit preservation by alcohol vapor. The details of these experiments or descriptions of apparatus would be wearisome, but a brief statement of our conclusions may be of value.

Thus, according to our experience, vapor of alcohol in a closed space will prevent more or less the growth of the fungi and bacteria which usually hasten decay. To be effective it

must be present in some appreciable quantity. In a tightly closed chamber of one yard cubical contents a half pint of alcohol in an open vessel will be sufficient. If alcohol vapor is present in comparatively larger quantities, the development of fungi and bacteria may be wholly prevented for several days, or even weeks. But in this case the fruits, especially those with soft flesh, absorb enough alcohol to affect the taste quite disagreeably. The fruit also deteriorates in color and texture. Although the growth of bacteria and fungi is stopped, other processes of decay seem to be hastened. With grapes alone the method seems to be practically successful. Grapes were kept for nearly two months at the temperature of a living-room and were still fit for table use, not being appreciably attacked by mold or affected in flavor. Not all the samples of grapes tested did so well, however.

We are inclined to believe from our observations up to the present that this method of preservation may very seldom be put to practical use, unless it be with grapes. With grapes there must still be considerable experimentation before the practical details can be satisfactorily worked out. With other fruits alcoholic vapor may be useful for comparatively short periods. Thus, berries or cherries might be placed in a tight refrigerator for a few days with an open vessel of alcohol and be preserved in better condition than without the alcohol.

Vermont Experiment Station. *F. A. Waugh.*

The Rose, Bridesmaid.

To the Editor of GARDEN AND FOREST:

Sir,—In your issue for October 28th your London correspondent speaks of the "American Rose, Bridesmaid, as sent out by May." Perhaps it is worth stating that this sport of Catherine Mermet originated with Mr. F. L. Moore, of Chatham, New Jersey, and was first called Hugh. I afterward induced him to change the name to Bridesmaid.

Summit, N. J. *John N. May.*

[We have a note to the same effect from Mr. Patrick O'Mara, who adds that it is interesting to know that Bridesmaid, which has now largely supplanted Catherine Mermet as a pink winter-flowering Rose, was received coldly by the trade at first. Perhaps this was because the Waban, also a pink sport from Catherine Mermet, which was issued a year before, was something of a disappointment.—ED.]

Recent Publications.

Hand-List of Trees and Shrubs Grown in the Arboretum of the Royal Gardens, Kew. Part II. Gamopetalæ to Monocotyledons.

The first part of this useful list appeared two years ago and was noticed in these columns (see vol. viii., p. 9), and last spring a hand-list of the Conifers grown in the Royal Gardens appeared. The part now before us completes the list of woody plants grown at Kew, so that at last we have a complete *Arboretum Britannicum*, or rather a list of the species and varieties of the woody plants cultivated at Kew, with their synonyms and convenient references to published figures. Although his name does not appear on the title-page, this list has been prepared by Mr. George Nicholson, the accomplished curator of Kew, whose exact knowledge of the trees and shrubs of European gardens has in this way been made serviceable to all cultivators of these plants.

The last *Arboretum Britannicum* is that of Loudon, published in 1838. The completion of Mr. Nicholson's work enables us now to make some interesting comparisons between the number of plants cultivated at this time and sixty years ago. In 1838, when Loudon's *Arboretum* was published, the hardy ligneous plants cultivated in Great Britain were derived chiefly from Europe, Asia Minor and eastern North America; a few eastern Asiatic trees and shrubs were also found in gardens at that time. These had chiefly been sent from Japan by Dutch botanists who had found them in Japanese gardens, although French missionaries had sent the seeds of a few trees from China to Europe. In 1838 a few of the principal conifers of western America were cultivated in Great Britain from Douglas's collecting ten years before. These plants, however, at that time were very small and little was known about them. Practically, therefore, all the trees and shrubs of western America, with few exceptions, have been introduced into Europe since Loudon's time; and since his time Hooker has botanized the high Himalayas and the forests of Sikkim, rich in magnificent species of Rhododendrons, now a chief ornament in many European gardens. Fortune, David and Henry have sent many plants to Europe from China; Von Siebold, Maximowicz and their successors have gleaned from Japan all its arborescent treasures; the Russians have made it possible for us to cultivate the trees and shrubs of central Asia and the valley of the Amur, and the Andes and New Zealand have been explored botanically. Since 1838, too, the hybridizer has been busy, and to his skill and perseverance we owe innumerable beautiful varieties of Rhododendrons, Azaleas, Roses and Lilacs. It is not, therefore, surprising that the number of the plants available for the decoration of the gardens and parks of temperate countries has increased enormously during the last half century. This, perhaps, will appear the more apparent by comparing the number of species in a few genera, selected at random, described in Loudon's *Arboretum*, with those in the present Kew lists. In Lonicera, Loudon included 29 species as cultivated in Great Britain in his time; Nicholson enumerates 53. In 1832, 32 Rhododendrons and Azaleas are described by Loudon, while in the Kew list we find 77; and in Quercus the number of cultivated species had increased from 45 to 76. These numbers are exclusive of varieties which have increased in about the same proportion as the species.

From the American point of view Mr. Nicholson's catalogue seems to leave something to be desired in the way of nomenclature; and it will serve as another example of the disadvantage of a system which is not based upon some fixed principle or rule. In view of the attitude of English botanists in general toward the American attempt to obtain stability of nomenclature we should have expected that the names adopted in this catalogue would have been those adopted in the *Kew Index*, which has only been completed a few months, the two publications having been prepared in the same establishment. But, taking our American Oaks as an example, we find the name of Quercus bicolor retained for our Swamp White Oak, and Quercus cinerea for the Blue Jack of the south Atlantic and Gulf coast, these being the names found in the *Index*. On the other hand, Quercus falcata, the name adopted in the *Kew Index* for the Spanish Oak, is discarded, while Quercus cuneata is adopted, the oldest name of this species being really Quercus digitata. Quercus ilicifolia is retained as the name of the little Bear Oak, and Quercus Kelloggii for the California Black Oak, while Quercus Marylandica of Muenchhausen and Sargent's *Silva* replaces Quercus nigra of Wangenheim, the name adopted by the *Kew Index* for the Black Jack, while Quercus aquatica of Walter, adopted in the *Kew Index* as the name of the Water Oak, is replaced by Quercus nigra of Linnæus. Quercus stellata is kept up as the name of the Post Oak, but Quercus velutina is adopted as the name for the Black Oak, although Quercus discolor is the name used in the *Kew Index*. Valuable as this work undoubtedly is to all cultivators of woody plants, we cannot but believe that if one of two principles had been rigidly adhered to in the selection of names it would have been even more valuable than it is now.

Notes.

The Ginkgo-tree is to be commended for its many good qualities, and among these must be mentioned the uniform clear light lemon-yellow color of its leaves in autumn. Standing in the full sunshine of an October day one of these trees is fairly luminous, as if shining with its own light.

The large apple crop in the United States has made unusual demands on barrel factories, some of which in apple-growing districts are unable to meet the orders of farmers of the neighborhood. Cold-storage houses have also profited through the

same crop, and the best establishments hold any remaining space at a premium.

Among the shrubs which delight us with their brilliant colors in the autumn, the Japanese Evonymus alatus is distinguished for the clear rose-pink of its leaves, which is unlike that shown by any other woody plant. Its fruit is less brilliant than that of our native Wahoo or of the European Spindle-tree, both of which belong to this genus. But the autumn color of the leaves of the Japanese plant is quite unique. It is a perfectly hardy shrub, too, of a compact habit and in every way desirable.

At one of the farmers' institutes in southern California, last summer, Mr. L. H. Cammack advocated the cultivation in that section of some semi-tropical fruits that are not very well known. Among these was the Avocado, or Alligator Pear, the fruit of Persea gratissima, which ripens as far north as Berkeley. There are red, purple and green varieties in cultivation, and many trees are growing thriftily in California. In Florida it is said a tree will yield a thousand pounds of fruit annually and begin to bear at the age of five years. It may interest persons who have it in mind to plant these trees to know that the fruit is steadily growing in popularity in this city, and, inasmuch as it can be picked a little before it is ripe, it carries fairly well.

A beautiful autumn bouquet can be made with fruiting branches of the different deciduous-leaved Hollies, the so-called Black Alders. In Japan one of the favorite house decorations at this season of the year is branches of Ilex Sieboldii, which are sold in the streets of Tokio and other cities in enormous quantities. Our American species bear, however, larger and showier fruit and are more decorative. The most beautiful of these plants is I. lævigata, although it is much less common than I. verticillata, a familiar inhabitant of northern swamp-borders. Of this plant there is a form with bright yellow fruit which is cultivated successfully in the Arnold Arboretum, where also the Japanese species flourishes, and this year is completely covered with its small, brilliant fruit. A vase containing branches of Ilex lævigata, the scarlet and yellow fruited forms of I. verticillata and of I. Sieboldii, gathered in the Arboretum, produces an effect which cannot easily be surpassed at this season of the year.

Nearly 100,000 barrels of Jamaica oranges have found a market in this city since the beginning of the season, whereas but 58,351 barrels came during the same period a year ago. The cost for freight, duty and other expenses is about $1.25 a barrel, and at present prices there is little money made in the handling of this fruit, since $2.50 a barrel has been the price in Kingston. Mexican oranges are at a still greater disadvantage, transportation costing about $3.00 a box. During the summer season 3,935 car-loads of fruits have been shipped from California. This includes what is known in the trade as "deciduous fruits," as distinguished from citrus fruits, and the season for which is nearly ended. Twenty car-loads of California grapes were sold here last week, comprising Cornichon, Flame Tokay, White Muscat, Black Ferrera, Verdel and Emperor. The last direct shipment of this year's crop of Almeria grapes is said to be on the way to this country. This cargo, together with those already received, amounts to 134,470 barrels, or 19,465 in excess of last year's importations, while in 1894, 249,375 barrels were received.

Miss Alice Eastwood, the botanical curator of the California Academy of Natural Sciences, has issued in separate form two botanical papers published in the Proceedings of the California Academy. The first is devoted to descriptions of some new California plants, and is enriched with seven plates from drawings made by the author. The plants here described are a Sedum, an Anemone, a Hosackia, a Lupine, a Heuchera, a Brodiæa and a Cynoglossum. Miss Eastwood's second paper is a report on a collection of plants made by her in San Juan County, in south-eastern Utah, during a journey in the summer of 1895 through the valley and over the plateaus of the San Juan River, near the McElmo Creek junction, to where Willow Creek joins the San Juan. In this hurried journey, made on horseback in eight days, 162 species were collected. The fruit of the beautiful Berberis Fremontii, one of the most interesting and characteristic shrubs of the Colorado plateau, Miss Eastwood describes as rose-color near the pedicels, yellowish above and dehiscent into two spreading valves. The fruit was first described as blue. As this species grows in northern Arizona in the neighborhood of the Colorado River, it is certainly bright blue when fully ripe. Fraxinus anomala was common throughout the region, growing on the edge of cañons and in the depths below. The range of this interesting tree, as usually published, must be extended into northern Arizona, where it is abundant on the upper slopes of the Cañon of the Colorado. Junipers, which are the most conspicuous feature of the vegetation of most of the Colorado plateau, were curiously absent in this particular region of southern Utah, only occasional trees of Juniperus monosperma having been seen by Miss Eastwood near the heads of the cañons that form branches of the San Juan. Here the trees were low and scraggy and generally solitary. The common Juniper of this region, Juniperus Utahensis, which is extremely abundant on the plateaus of western Colorado, through the high valleys of the Great Basin and in northern Arizona, was not observed by Miss Eastwood.

Last year the Legislature of the State of Maryland enacted a law making it the duty of the State Entomologist to inspect all the nurseries in the state for the detection of injurious insects or plant diseases which might be disseminated by selling the stock. Under this act, whenever a pest or disease is discovered the owner is notified and remedies are suggested. If he does not apply the remedies in the time specified, he is liable to a fine of $1.00 for every tree or shrub or plant shipped from his nursery. The Entomologist can enter the premises in such a case, employ such assistance as he needs, and apply remedies for the destruction of the pest at the expense of the owners. In case the stock is free from infection the owner is furnished with a certificate to that effect, and he is required to send on every package shipped, as well as to transmit to the purchaser by mail, a certificate signed by him that the stock has been examined by the State Entomologist and that it is free from danger. Another section of the law provides for a certificate to be affixed to every package of nursery stock which comes into the state of Maryland from another state, showing that the contents have been examined by an authorized officer and are free from insects and diseases. If this act has not been complied with the packages are returned to the shipper, unless the consignee of the stock has it examined by the State Entomologist, who shall give the necessary certificate. In a bulletin lately issued from the State Experiment Station by the Entomologist it is stated that the nurseries of Maryland have been inspected and are, on the whole, in fine condition. The San José scale has been located in only three nurseries and has been in every case destroyed. No single case of yellows on marketable stock was found. The Pear slug was found in several cases, but these insects are so easily killed by hellebore that it is gross negligence on the part of any nurseryman to allow his stock to be dwarfed by it. Mr. Johnson, the entomologist, has had the active assistance of nurserymen in this campaign, and there is little doubt that if the same energy was exercised in all the other states these enemies of orchards and gardens would soon be under control so far as their distribution through nursery stock is concerned. This bulletin contains valuable information concerning the Peach yellows, the San José scale, and an account of a new disease of the Peach, of which no fungus or bacterial affection so far known can be identified as the cause.

The death is announced of Dr. Henry Tremen, at Peradenyia, in the island of Ceylon, on the 16th October, in his fifty-third year. He was educated for the medical profession and received a medical degree from the University at London, and became an assistant in the Botanical Department of the British Museum. With the present director of the Royal Gardens at Kew he prepared a Flora of the County of Middlesex in England, and with Professor Bentley a standard work on Medical Botany. In 1882 Dr. Tremen was appointed director of the Royal Botanic Gardens at Peradenyia, one of the most important and beautiful of all tropical gardens. In this position he devoted himself to a complete Flora of Ceylon, three parts having appeared. A few months ago ill health compelled him to sever his official connection with the Garden.

Auguste Trécul, the distinguished French plant anatomist, died in his seventy-sixth year, after a long retirement from active scientific work. His principal papers relate to the development and relations of the vascular system in plants and to the mode of growth of stems and roots. He is best known to Americans, perhaps, by his travels and botanical discoveries in the states west of the Mississippi River, especially in Texas, where he was sent in 1848 by the French Government to collect material for the Paris Museum and to study the textile plants used by the Indians of the Plains, and where he remained during three years. The beautiful arborescent Yucca of the lower Rio Grande valley, first introduced by him into European gardens, bears his name.